

Regarding Proposed Plan for

San German Groundwater Contamination Superfund Site (OU-2)

September 10, 2019

## Table of Contents

1.0 Introduction .....	1
2.0 Overview of Selected and Proposed Remedies for OU-1 and OU-2 .....	1
2.1 EPA's Selected Remedy for OU-1 .....	1
2.2 EPA's Proposed Remedy for OU-2 .....	2
3.0 Comments on OU-2 Remedy .....	3
3.1 EPA Perpetuates Misstatement of the Name of the Entity Occupying the Wallace Lot; EPA should correctly identify the occupant as WSPRL .....	4
3.2 Evaluation of Properties as Sources of Contamination has been Inadequate; EPA should recognize the Baytex Lot as a Source and Put the Former Occupants on Notice as PRPs .....	4
3.3 Without releasing information to the public on the progress, if any, of work on OU-1, EPA has issued a Proposed Plan for OU-2 that relies on a Feasibility Study lacking in bench-scale and pilot studies for the preferred remedy, paying only lip service to coordination with action for OU-1, and reflecting questionable costs; EPA should reevaluate its costing and approach to remediation. ....	6
3.3.1 EPA has provided no update regarding progress, if any, with respect to remedial design or action for OU-1; Critical Data regarding OU-1 that Should Inform Decisionmaking and Meaningful Public Comment Regarding OU-2 is Lacking .....	6
3.3.2 EPA's Preferred Remedy is Overly Elaborate and the Estimated Cost is Misleading; Issuance of the Proposed Plan is Premature because the FS is Inadequate. ....	7
3.3.3 Monitored Natural Attenuation in Concert with More Limited In-Situ Treatment Would Be A More Cost-Effective Remedy to Achieve Remedial Objective Outcomes .....	8
3.3.4 The Remedies for OU-1 and OU-2 Should Be Combined in a Holistic Manner .....	9
3.3.5 Other Considerations .....	10
4.0 Summary and Conclusion .....	10

## 1.0 Introduction

In July 2019, the United States Environmental Protection Agency (EPA) issued a proposed plan (hereinafter referred to as “the Plan” or the “Proposed Plan”), which describes the remedial alternative selected for the San German Groundwater Contamination Superfund Site (Site) Operable Unit 2 (OU-2). The Plan was issued pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Under those federal authorities, the Site is being addressed through two operable units: OU-1 - Site Soils; and OU-2- Groundwater. The nature and extent of contamination in OU-2 have been explored in OU-2 Remedial Investigation (RI) and Feasibility Study (FS) reports. On behalf of Wallace Silversmiths de Puerto Rico, Ltd. (WSPRL), the current occupant of the Wallace Lot, this document provides technical comments to the Proposed Plan and is submitted within the timeframe for such comments as determined by EPA. We respectfully request that EPA consider and respond to each and every one of these comments in the Record of Decision (ROD). For the sole purposes of this comment letter, we rely on the site background descriptions provided by EPA in the Plan unless otherwise noted herein.

On December 11, 2015, EPA issued a ROD for OU-1, which selected Soil Vapor Extraction (SVE) and Dual Phase Extraction (DPE) as the remedy for the soil impacts (covering both unsaturated and saturated soils) in the area encompassing OU-1. In the Proposed Plan for OU-2, EPA has identified its preferred remedy as In-Situ Treatment and Monitored Natural Attenuation (Alternative 3 of the FS) for the groundwater remediation remedy for OU-2. The Plan also includes long-term monitoring for vapor intrusion and institutional controls. (Proposed Plan at 2.)

EPA has considered only two (2) properties as sources of groundwater contamination at the Site: the Wallace Lot and the CCL Lot (formerly occupied by CCL Insertco Puerto Rico Inc., a subsidiary of CCL Label Inc., and currently occupied by CCL Label (San German) Inc., a subsidiary of CCL Label Inc.), which lots are both located in the Retiro Industrial Park in San German, Puerto Rico.

## 2.0 Overview of Selected and Proposed Remedies for OU-1 and OU-2

### 2.1 EPA’s Selected Remedy for OU-1

By way of background and as presented in the ROD for OU-1, EPA selected a remedy consisting of Soil Vapor Extraction (SVE) and Dual Phase Extraction/In-Situ Treatment as the alternatives to address soil impacts. That remedy (Alternative S3) includes the following components:

- SVE to address soil (vadose zone) source areas at the Wallace and CCL lots;
- Impermeable cover as necessary for the implementation of SVE (engineering control);
- DPE in the shallow saprolite zone; and

- In-situ treatment, such as enhanced anaerobic biodegradation.

The ROD states that under the Pre-Design Investigation (PDI), a pilot study would be performed to collect design parameters for the SVE and DPE systems. Such study was to include performance of an air permeability test to collect field measurements to determine the achievable air flow rate, the required vacuum to induce the flow, the radius of influence from the applied vacuum, and the initial contaminant removal rates.

The estimated cost for this remedy was:

Capital Cost	\$ 5,448,000
Present Worth O&M Cost	\$ 1,880,000
Total Present Worth Cost	\$ 7,328,000
Construction Time Frame	8 months
Timeframe to meet RAOs	At least 10 years

Neither the results of this study nor any other PDI documents have been made available for public review.

## 2.2 EPA's Proposed Remedy for OU-2

In the Proposed Plan for OU-2, EPA has identified Alternative 3 of the Feasibility Study as the preferred remedial option for groundwater impacts. Alternative 3 includes in-situ treatment of groundwater and a monitored natural attenuation (MNA) program including monitoring of the plume fringe.

Under this alternative, in-situ treatment is proposed using a chemical reagent to promote reductive dechlorination of the cVOCs at the Wallace and CCL Lots and in the downgradient portion of the dissolved phase groundwater plume. Conceptually, a recirculation methodology is proposed to inject the chemical reagent at the Wallace and CCL Lots to be extracted for re-injection via either vertical or horizontal wells placed immediately downgradient of those facilities and in two (2) distinct permeable reactive barriers (PRBs) to intercept the dissolved-phase contaminants at the core of the migrating plume either horizontally or vertically. The vertical barrier installation contemplates sixty (60) injection points on 30-foot centers. A bioremediation or carbon amendment - such as EVO, whey, LactOil™, or Plume Stop™ - is proposed to be used as the reagent for the dechlorination process. The plan calls for a pilot study that would be conducted at a location feasible for the installation of a full-scale treatment barrier to collect site-specific design parameters, which include injection rate, radius of influence, and the required number of injections to achieve the RAOs.

According to the Proposed Plan, the major components of this alternative include:

- Pre-Design Investigation (PDI);
- Remedial Design (RD);
- In-situ treatment at the plume core;
- Monitoring of the plume fringe to evaluate migration and natural attenuation;
- Institutional controls; and
- Five-year review process.

According to the Proposed Plan, the estimated cost for this remedy is as follows:

Capital Cost	\$13,300,000
Present Worth O&M Cost	\$4,000,000
Total Present Worth Cost	\$17,300,000
Construction Time Frame	4 years
Timeframe to meet RAOs	30 years or longer

The following sections outline our comments to the remedy selected in the Plan for both soil and groundwater at OU-2.

### 3.0 Comments on OU-2 Remedy

Upon review of information provided to date, our comments are summarized as follows:

- EPA failed to perform an adequate evaluation of properties in proximity to the Wallace and CCL Lots that are contributing to the contamination subject to the proposed remedy. There is at least one additional property (the Baytex Lot) responsible for contributing to the chlorinated solvent contamination in soil and groundwater. The selected remedy should recognize the Baytex Lot as a source of contamination and provide for further investigation and eventual modification of the remedy as warranted. In addition, EPA should provide an updated notice and information request to the former occupants of the Baytex Lot indicating that they are Potentially Responsible Parties (PRPs).
- EPA's Preferred Remedy is overly elaborate, and the costs to implement it are questionable. Since this remedy has been insufficiently evaluated – in particular, it does not appear that any bench-scale or field pilot-scale testing has been performed – it is uncertain whether or not the project-specific Remedial Action Objectives (RAOs) can successfully be achieved within the proposed duration and/or estimated cost. A field pilot study has been proposed to be conducted

in the Plan to obtain necessary design parameters for Alternative 3 of the FS. Due to the nature of the proposed remedy (i.e., biological and chemical dechlorination of the contaminants of concern), First Environment believes that bench-scale testing is necessary before a pilot-scale test is designed and implemented. In addition, based on First Environment's expertise and experience with in-situ remedial technologies of this nature, repeated injections of the chemical reagent would almost certainly be required in order to ensure that the PRBs continue to function as designed. Since the Plan does not specify the number of injection rounds, the proposed cost is inaccurate and misleading.

- The remedies for soil and groundwater can potentially be combined to achieve the RAOs in a more cost-effective way.

### **3.1 EPA Perpetuates Misstatement of the Name of the Entity Occupying the Wallace Lot; EPA should correctly identify the occupant as WSPRL**

In the ROD for OU-1, EPA misstated the name of the current occupant of the Wallace Lot as Wallace International de P.R., Inc. and agreed to correct this error in future documents. (See ROD OU-1, Appendix VII – Responsiveness Summary at 12, Comment 29 [DOC ID 372938].) Perhaps in referencing the text of the ROD for OU-1, this mistake has carried over in the Proposed Plan for OU-2. To avoid confusion, EPA should refer to the current occupant of the Wallace Lot as "WSPRL" which is an acronym for Wallace SilverSmiths de Puerto Rico, Ltd. (the correct name of the current occupant) and distinct from former occupant (Wallace International de P.R., Inc.). It would also be prudent for EPA to verify the name of the current and most recent former occupant of the CCL Lot.

### **3.2 Evaluation of Properties as Sources of Contamination has been Inadequate; EPA should recognize the Baytex Lot as a Source and Put the Former Occupants on Notice as PRPs**

According to the Proposed Plan, EPA considered only two (2) properties as sources of groundwater contamination: the Wallace Lot and the CCL Lot, which are located in the Retiro Industrial Park in San German, Puerto Rico.

However, our analysis of the RI/FS conducted for OU-1 reveals that there is at least one additional source of chlorinated solvents in the Retiro Industrial Complex. That source is the Baytex Lot (previously occupied by Baytex International, Digital Equipment, Fashions Knitwear and Northridge Knitting Mills) and is located north of and across the street from the Wallace Lot and west and adjacent to the CCL Lot. (See Foerter\_Weston Pre-CERCLIS Screening Report, September 2006 at 6-7 including also Appendix F: Retiro Industrial Park – Historical Occupants – Figure 3.)

In a Pre-CERCLIS Screening Report in 2006, EPA identified 44 sites for evaluation as potential sources. Six sites were recommended for further investigation, including a Gulf gas station (soil and groundwater samples), Acorn Dry Cleaners (soil and groundwater samples), Garaje Rodriguez (an auto body shop – no samples), and three properties in Retiro Industrial Park:

- (1) the building formerly occupied by Baytex;
- (2) the building then-leased by CCL Label; and
- (3) the buildings on the Wallace Lot.

Subsequently, as reported in the RI for OU-1, Preliminary Source Assessment (PSA) investigations were performed at five facilities in February and May 2012, including four (4) at the Retiro Industrial Park (Wallace, CCL Label, Former Baytex, and Pitusa/National Lumber). The fifth PSA was Acorn Dry Cleaners located to the west of the industrial park. Soil samples were collected at 0 to 2 feet, 5 to 7 feet, 10 to 12 feet, 20 to 22 feet and 30 to 32 feet. A total of 41 borings were completed at these five (5) sites and 159 soil samples were collected for analytical laboratory analysis. Temporary well groundwater samples were also collected from each boring for analytical laboratory analysis.

Both the Wallace and CCL Lots revealed elevated levels of cVOCs in soil and groundwater, indicative of potential source(s) of contamination.

Acorn Dry Cleaners samples (both soil and groundwater) did not reveal any contamination above the applicable screening levels.

Samples collected from the former Baytex property, however, indicated elevated concentrations of PCE in both soil and groundwater as follows (see Final RI Report, OU-1, July 25, 2015 (Doc ID 350390) at page 4-5, Table 4-6 and Figure 4-3 [the latter is also included in the ROD for OU-1]):

Soils - The sample collected from the soil boring FB-04 at the depth interval of 10 to 12 feet below surface grade (bgs) revealed a PCE concentration of 150 ppb, which is approximately three times higher than the applicable screening level of 46 ppb for this compound. (See RI Report OU-1: Figure 4-3.) The depth to groundwater was reported in this region to range from 15 to 20 ft. bgs; therefore, this sample was obtained from the unsaturated (vadose) zone, indicative of a direct discharge of PCE into the soil matrix. At boring FB-10, a soil sample collected from the same approximate interval (10-12 ft. bgs) indicated PCE concentrations of 120 ppb, and 260 ppb (the latter flagged with a "J" as an estimated concentration). Similarly, a soil sample collected from boring FB-05 indicated an estimated (with J designation) PCE concentration of 180 ppb, which is also above the screening level.

Groundwater - A groundwater sample from FB-10 revealed a PCE concentration of 1,300 ppb, which is significantly above the screening level of 5 ppb, the Federal MCL for this compound. (See RI Report OU-1: Figure 4-3.) A groundwater sample collected from FB-05 revealed a significantly high concentration of 2,690 ppb (with D designation, indicating that the sample was diluted). Samples FB-01, FB-02, and FB-03 also indicated soil exceedances at the 20 to 22 ft. bgs (groundwater interface) and groundwater exceedances.

In view of the above data which clearly shows an additional source of chlorinated solvents in this area, the former Baytex Lot should be included as a source of contamination in connection with OU-2 as it is

clearly a contributor to the dissolved PCE groundwater plume (and potentially to the TCE plume via degradation of PCE). However, this site was not considered or even discussed in the Plan as being a target in connection with the remedy for OU-2. The remedy should recognize the Baytex Lot as a source of contamination and provide for further investigation and eventual modification of the remedy as warranted. In addition, EPA should provide an updated notice and information request to the former occupants of the Baytex Lot indicating that they are Potentially Responsible Parties (PRPs).

We note as well that EPA does not appear to have addressed sewers or discharges thereto within the Retiro Industrial Park as being sources of contamination and does not appear to have focused on upgradient lots formerly occupied by Caribe GE Distribution Components as potential sources of contamination, although EPA's Pre-CERCLIS Screening Report identified the use of chlorinated solvents by Caribe GE. (See Foerter\_Weston 2006 at 8-9.)

### **3.3 Without releasing information to the public on the progress, if any, of work on OU-1, EPA has issued a Proposed Plan for OU-2 that relies on a Feasibility Study lacking in bench-scale and pilot studies for the preferred remedy, paying only lip service to coordination with action for OU-1, and reflecting questionable costs; EPA should reevaluate its costing and approach to remediation.**

#### **3.3.1 EPA has provided no update regarding progress, if any, with respect to remedial design or action for OU-1; Critical Data regarding OU-1 that Should Inform Decision making and Meaningful Public Comment Regarding OU-2 is Lacking**

EPA has not made available its Pre-Design Investigation and Remedial Design Investigation Reports or Memos in connection with Implementation of the Remedy for OU-1. The RI and FS reports, completed in June 2018 and July 2018, respectively, were only made public over a year later in conjunction with the release of the Proposed Plan for OU-2. To date, EPA has not provided any update on its work with respect to OU-1 other than its Final Work Plan dated July 25, 2018. That plan, issued over two years after issuances of the ROD, listed the following tasks as optional:

- Treatability and Pilot Testing
- Preliminary Design
- Pre-Final and Final Design
- Post-Remedial Design Support

The public lacks information to date with respect to remedial design activities with respect to OU-1. Data from design studies for the OU-1 remedy would be highly informative and possibly close critical information gaps with respect to the selection of potential remedies for OU-2. Lack of such data restricts the public's ability to provide meaningful comment based on complete information. As stated in the FS for OU2, "OU-1 remedial design activities would provide useful information for the OU-2 remedy [, and ...] the OU-1 pilot study for in situ treatment could provide site specific design parameters if in situ

treatment is selected as a component of the OU-2 remedy.” (FS, OU-2 at 2-6.) The FS also indicates that design studies and remedy implementation should be coordinated to reduce the impact on manufacturing operations at the Wallace Lot. The remedy selection process, and public input into same, is accordingly restricted due to this lack of transparency and information coordination.

### **3.3.2 EPA’s Preferred Remedy is Overly Elaborate and the Estimated Cost is Misleading; Issuance of the Proposed Plan is Premature because the FS is Inadequate.**

As mentioned above, EPA has identified in-situ treatment of groundwater and a monitored natural attenuation program (MNAP) as the preferred remedy for OU-2. Although it mentions that a PDI would be conducted for the final design of this in-situ treatment system, the Plan calls for injection of a chemical reagent (e.g., EVO, whey, LactOil™, or Plume Stop™) to act as a reducing compound at the Wallace and CCL Lots with injection and recirculation of the selected chemical reagent at the source areas of both facilities<sup>1</sup> and with PRBs constructed to capture the dissolved-phase contaminant plume at its core in order to minimize further migration. This remedy is likely more elaborate than needed (that is, it is unnecessarily complex), and we question the cost estimates and effectiveness.

First, the dechlorination process is a time-limiting process, which depends on and is affected by many site-specific parameters/conditions, such as the dissolved oxygen levels, abundance of specific bacteria (DHC) which can biodegrade cVOCs, pH, redox potential, temperature, and other chemicals, particularly metals, organic carbon, etc. In similar cases reported in the literature, such injection programs are almost always repeated several times at specific time intervals to achieve the “right” conditions for reductive dechlorination under complete anaerobic conditions. Although the Plan mentions several chemical reagents that can be used in the proposed injection program, there has not been site-specific field testing regarding injection levels needed to maintain full anaerobic conditions in the subsurface to achieve the dechlorination process. Therefore, First Environment believes that bench-scale testing should be performed using site-specific soils and groundwater for each of those reagents (and perhaps additional ones) to make a proper selection. Once the reagent is properly selected, then pilot scale testing should be performed to evaluate the process and the efficiency of the treatment. The results of both bench- and pilot-scale tests would provide the necessary design parameters for the full-scale remedy and the number of injection rounds to achieve the RAOs. The cost estimate in the FS is based on two rounds of injections being performed. (FS, OU-2, July 20, 2018, Appendix C-2.) As indicated above, a two-time injection regime may not achieve the RAOs to assure regulatory compliance, because the desired level of dechlorination would not be achieved.

Another point to emphasize about this technology is that the reductive dechlorination process might in turn generate vinyl chloride (VC), which is a significantly volatile constituent and cannot be degraded by the same anaerobic process as the PCE and TCE. The generation and accumulation of VC would pose a high vapor intrusion risk to the nearby residents. Finally, the design, successful employment, and cost of

---

<sup>1</sup> The recirculation process would also provide a limited hydraulic control within those areas.



the remedy are highly dependent on field tests and pilot study. Accordingly, EPA should review its evaluation and cost estimate for this technology in light of our comments and document its approach accordingly.

### **3.3.3 Monitored Natural Attenuation in Concert with More Limited In-Situ Treatment Would Be A More Cost-Effective Remedy to Achieve Remedial Objective Outcomes**

The Proposed Plan for OU-2 states that “several years (2013 – 2018) of groundwater monitoring data indicate that the plume fringe is stable” and that “[n]atural processes of reductive dechlorination, along with dilution and dispersion, are on-going and expected to continue to reduce concentrations in the future.” (Proposed Plan pp 7-8.) Based on First Environment’s evaluation discussed below above, MNA is a feasible technology for the Site, provided that the source(s) of groundwater contamination is eliminated.

First Environment evaluated the groundwater data provided in the ROD for OU-1 as well as in the RI/FS reports for OU-2. Based on this evaluation, the following conclusions are drawn:

1. Groundwater is first encountered in the saprolite layer (i.e., sands, silts, clays, and weathered rock), underlying the surficial alluvium soils under the Wallace and CCL Label facilities.
2. Average depth to groundwater within the vicinity of the Rio Guanajibo river (the River) ranges between the river level and 15 to 25 feet bgs.
3. Groundwater occurs under confined and semi-confined conditions within the saprolite layer and the underlying unstable bedrock zone. The flow is toward the northwest from the two facilities.
4. Separate plumes of PCE and TCE originating from the Wallace and CCL Label facilities are currently commingled and have migrated toward northwest direction. The majority of groundwater contamination appears to be in the saprolite zone and in the upper portion of the unstable rock underlying the saprolite zone.
5. Dense Non-Aqueous Phase Liquids (DNAPLs) have not been observed at the Site.
6. Both PCE and TCE plumes are oriented toward northwest, which is consistent with the groundwater flow direction.
7. First Environment compared the results of groundwater sampling conducted in the OU-1 investigation with the two rounds of sampling during the OU-2 investigation. Based on this comparison, both PCE and TCE plume fringes appear to be stable and not migrating further than they are depicted in the aforementioned plume maps. The commingled plume does not appear to have entered the River nor is it anticipated to do so in the future. Both PCE and TCE data show that degradation (dechlorination) is already occurring in the groundwater plumes, and concentrations of PCE and TCE appear to be decreasing within the footprint of the plumes.
8. The present plume does not pose an unacceptable risk to public health or the environment through the groundwater to surface water pathway.
9. Since there is an evidence of apparent degradation, monitored natural attenuation (MNA) is a feasible alternative for groundwater remedy.

MNA in concert with limited augmentation of existing geochemical conditions to enhance reductive dechlorination is a scaled down version of EPA’s Preferred Remedy.

### 3.3.4 The Remedies for OU-1 and OU-2 Should Be Combined in a Holistic Manner

As mentioned above, EPA selected a SVE and DPE technology along with in-situ treatment for OU-1. We have several technical concerns with the use of these technologies at this Site. First, SVE and DPE technologies implemented together are redundant and unnecessary. The SVE technology is a soil treatment technology that depends on the application of sufficient vacuum (in the order of inches of water) into the vadose zone to volatilize VOCs and capture them for ex-situ treatment. Although it can be an effective soil remediation technology, SVE does not address the dissolved phase groundwater or free-phase contamination in soil and groundwater. Second, the DPE technology, although similar to SVE, differs in terms of the vacuum needed (in the order of inches of mercury) to achieve remediation goals. The DPE technology applies a high vacuum that establishes a cone of depression that extracts both groundwater and contaminant vapors. Therefore, this technology is suitable for both soil (vadose and saturated zones) and groundwater treatment. Provided that a pilot test is conducted and full-scale DPE system is designed properly, both soil and groundwater impacts would be treated simultaneously. As an added advantage, the DPE technology also aids in mitigating impacts to soil vapor and therefore can also be utilized as a vapor intrusion technology for the occupied spaces.

The FS for OU-2 provided discussion for Alternative 2, which includes groundwater extraction and ex-situ treatment. The extraction process includes pump and treat or similar technology for a long-term (30 years) undertaking. Based on the nine (9) selection criteria provided by NCP, EPA did not select this alternative. In spite of EPA's conclusion in the FS, it is First Environment's professional opinion that if the extraction of groundwater is achieved *via* a properly designed DPE system, this alternative would be the best solution not only for soil but also for groundwater impacts at the potential source areas (DPE also provides mitigation for potential vapor intrusion). Although the DPE technology may be the best solution to mitigate source area in soil and groundwater, it has its own disadvantages in terms of the in-situ treatment of the overall contaminant plume. Since the in-situ treatment technology depends on creating and maintaining anaerobic conditions within the subsurface, the DPE technology would be adverse to it because of oxygenation in the subsurface that would be induced by the DPE application. Therefore, the DPE technology should only be considered for a short-term application limited to the potential source areas, and should be followed by a properly designed in-situ treatment technology.

Since a PDI and a pilot test are necessary to implement a full design of a DPE system, a proper cost estimate of this technology cannot be devised at this time. However, First Environment anticipates that the total cost of implementing separate remedies for soil and groundwater would exceed the cost of the combined system. EPA should review the analysis presented in the FS for Alternative 2 in the context of the above comment and revise the outcome accordingly.

While MNA and limited augmentation with injections of bioamendment reagent alone would not allow for attainment of RAOs, MNA and limited augmentation in combination with either a short-term DPE application and/or limited excavation of hot spots would allow attainment of RAOs. A version of the latter alternative was examined in the FS for OU-1 as "Alternative S2 – Excavation/offsite disposal/in situ treatments" but was rejected by EPA in part due to an estimated present worth cost of \$13.4 million

compared to the selected SVE and DPE/in-situ remedy carrying a cost of \$7.3 million. We note, however, that excavation targeted indoor and outdoor locations on the Wallace Lot (see FS, OU-1, Figure 3-1) at a cost of about \$0.92 million and that transportation and disposal costs were estimated to be \$5.4 million. We question both the extent of required excavation and the cost of disposal.

### 3.3.5 Other Considerations

Besides the remedial alternatives discussed above, other technologies exist to address cVOC contamination. One such technology is Electric Resistance Heating (ERH), which is likely to be the most efficient technology to address both soil and groundwater impacts in a relatively shorter period of time (within several years as opposed to decades). The capital cost of implementing an ERH system at any given site is almost always higher than implementation of other technologies. However, it is First Environment's experience and professional opinion that the ERH technology could be a cost-effective technology in the long run since it provides a more than 99% cleanup of a cVOC site in less than a decade when other technologies would require extensive monitoring and/or reapplications. The market for ERH is limited to a few specialty contractors, but some of those contractors provide written guarantees to assure cleanup to the appropriate concentration. Therefore, EPA should review the remedial technologies presented in the FS and add ERH as part of its analysis. As such, consideration should be given for ERH to be implemented as an alternative for the Site.

## 4.0 Summary and Conclusion

EPA's selected remedy for OU-1 and preferred remedy for OU-2 carry a combined present worth estimated cost in excess of \$24 million. EPA has provided no information to date on its progress with respect to OU-1. EPA should sharpen its review of costs, reconsider its approach to remediation and propose a hybrid of remedies covering OU-1 and OU-2 in concert with the issuance of an Explanation of Significant Differences letter for the OU-1 ROD. Although we understand that EPA wants to show progress in advancing remediation and contractor time in the field may be limited by various constraints, EPA should not issue a Proposed Plan for an NPL Site without performing an adequate Feasibility Study. To do so is contrary to requirements of the National Contingency Plan. Arguably, the Site should be delisted from the NPL, because the public supply wells that resulted in a Hazard Ranking System score sufficient for NPL listing are now closed (and have been closed for some time).

Direct bio treatment injections in concert with MNA and a short-term application of DPE and/or limited excavation of hot spots would provide a suitable, more cost-effective remedy for OU-1 and OU-2 than the approved and proposed preferred remedies carrying a present worth cost in excess of \$24 million according to EPA's estimates. ERH should also be considered as an alternative for the Site.

We would be happy to meet with representatives of EPA to explain our comments in more detail.